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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : M. MATSUSHITA et al.

Group Art Unit: 3739

Appl No. : 09/848,301

Examiner: J.D. RAM

Filed : May 4, 2001

For : FLEXIBLE TUBE FOR AN ENDOSCOPE

APPEAL BRIEF UNDER 37 C.F.R. § 1.192

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

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Sir:

This appeal is from the Examiner's final rejection of claims 2, 3, 5, 8-14, and 16-21, as set forth in the Final Official Action of April 8, 2003 and as modified in the Advisory Action dated July 28, 2003.

A Notice of Appeal in response to the Final Official Action of April 8, 2003 was filed on August 8, 2003. The two-month statutory period for response was set to expire on October 8, 2003, and for which a Request for Extension of Time for one month is being filed concurrently herewith, setting the period for response to expire on November 10, 2003 (November 8, 2003 being a Saturday). Further, the instant Appeal Brief is being submitted in triplicate pursuant to 37 C.F.R. § 1.192(a), together with a check including the requisite fee under 37 C.F.R. § 1.17(c) in the amount of \$330.00 for the filing of the Appeal Brief.

However, if for any reason the necessary fee is inadequate or is not associated with this file, the Commissioner is authorized to charge the fee for the Appeal Brief and any necessary extension of time fees to Deposit Account No. 19-0089.

Appellants respectfully request that the decision of the Examiner to reject claims 2, 3, 5, 8-14, and 16-21 as set forth in the Final Rejection (as modified by the Advisory Action issued July 28, 2003) be reversed and that the application be returned to the Examining Group for allowance.

(1) REAL PARTY IN INTEREST

The real party in interest is Pentax Corporation, formerly known as Asahi Kogaku Kogyo Kabushiki Kaisha, as established by an assignment recorded in the U.S. Patent and Trademark Office on July 5, 2001 at Reel 011952, Frame 0673. A Change of Name to PENTAX Corporation is being filed concurrently herewith to reflect the change.

(2) RELATED APPEALS AND INTERFERENCES

Appellants are presently not aware of any other appeals and/or interferences which will directly affect or be affected by or have a bearing on the Board's decision in the present Appeal.

(3) STATUS OF THE CLAIMS

Claims 1 and 15 have been canceled.

Claims 4, 6, and 7 stand objected to as being dependent upon a rejected base claim, but as being allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. In this regard, Appellants have filed concurrently herewith an Amendment under 37 C.F.R. § 1.116 to rewrite claim 4 into independent form in order to place claims 4, 6, and 7 into condition for allowance.

Claims 22-37 stand withdrawn from consideration as being directed to a nonelected invention.

Claims 2, 3, 5, 8-14, and 16-21 are on appeal and stand finally rejected.

Claim 12 stands objected to under 37 C.F.R. § 1.75(c) as being of improper dependent form for failing to further limit the subject matter of a previous claim.

Claims 2, 3, 5, 8-14, and 16-21 stand finally rejected under 35 U.S.C. § 102(e) as being anticipated by SUGIYAMA et al. (U.S. Patent No. 6,458,075).

(4) STATUS OF THE AMENDMENTS

A Request for Reconsideration Under 37 C.F.R. § 1.116 was filed on July 8, 2003.

As noted above, an amendment under 37 C.F.R. § 1.116 is being filed concurrently herewith, in which claim 4 has been rewritten in independent form. It is noted that claims 6 and 7 depend from claim 4.

(5) SUMMARY OF THE INVENTION

The present invention is directed to a flexible tube for an endoscope, and more particularly to an outer cover that is provided over a core body of the flexible tube. Figure 1 shows an endoscope 10 having a flexible tube 1A according to the present invention. Figure 2 is a sectional view showing detail of the flexible tube 1A. (Specification, page 12, lines 10-21). The endoscope 10 includes an operating section 6 with control knobs 61, 62, a light guide flexible tube 7, a plug 8 and a connector 82 to be connected to a light source, and a flexible tube 1A having an imaging element at an end thereof to be inserted into a body cavity. (Specification, page 13, lines 2-24). The operator of the endoscope may change the direction of the flexible tube via the control knobs. During operation of the endoscope, the flexible tube 1A is inserted into a body cavity, the imaging element transmits an image of the body cavity to the plug 8 which processes the image, and the processed image is transmitted to a monitor for recording and/or observation by the operator. (Specification, page 13, line 25 through page 14, line 14).

As shown particularly in figure 2, the flexible tube 1A includes a core body 2 and an outer cover 3. A hollow space 24 is provided inside the flexible tube 1A for receiving internal elements. The core body 2 is constructed from a coil 21 and a reticular tube 22 covering the coil 21. The core body 2 so formed provides the flexible tube 1A with torque transmission ability, tracking ability to a body cavity, and mechanical strength. The coil 21

is formed from a flat metal band that is wound into a spiral having a uniform diameter and a gap 25 between adjacent windings. The reticular tube 22 includes a plurality of fine metal wires 23 woven in a lattice with spaces 26 therebetween. Accordingly, a plurality of recesses and holes are formed in the core body 2. (Specification, page 15, line 20 through page 16, line 11).

The outer peripheral surface of the core body 2 is covered with the outer cover 3. The outer cover 3 or a portion thereof is formed of a laminate structure which comprises an inner layer 31, an intermediate layer 33, and an outer layer 32. One of the inner layer 31, the intermediate layer 33, and the outer layer 32 is formed of a material which is different from the material of the other layers in its physical properties or its chemical properties. (Specification, page 16, lines 12-24). The inner layer 31 adheres to the core body 2 via a plurality of anchoring projections 4 extending into the spaces 26 (the holes and recesses) and to the coil 21. The anchoring projections 4 increase the bonding strength and the durability of the bond between the core body 2 and the outer cover 3. Additionally, the wires forming the reticular tube 22 may be coated with synthetic resin, in which case the reticular tube 22 will be fused and bonded to the inner layer 31 of the outer cover 3. The configuration allows the outer cover 3 to expand and contract with the bending of the flexible tube 1A and provides a high degree of flexibility to the flexible tube 1A. (Specification, page 17, line 1 through page 18, line 22).

The outer layer 32 of the outer cover 3 is formed of a material having a high resistance to chemicals and a relatively high hardness so as to prevent deterioration and to prevent the outer cover 3 from peeling off of the core body 2. Preferably, the outer layer 32 has a hardness that is higher than either of the inner layer 31 or intermediate layer 33. (Specification, page 20, line 9 through page 21, line 4).

The intermediate layer 33 of the outer cover 3 preferably is formed of a material having an elasticity that is higher than either of the outer layer 32 and the inner layer 31. This configuration of the outer cover 3 allows the intermediate layer 33 to provide a cushioning function, which in turn provides a higher flexibility to the flexible tube 1A. (Specification, page 22, line 5 through page 23, line 6).

(6) ISSUES

(A) Whether claims 2, 3, 5, 8-14, and 16-21 are improperly rejected under 35 U.S.C. § 102(e) as being anticipated by SUGIYAMA et al. (U.S. Patent No. 6,458,075). Whether SUGIYAMA et al. contains any teaching anticipating a flexible tube for an endoscope including, in the claimed combination, an elongated tubular core body, and an outer cover which is provided over the core body, the outer cover having a portion which is formed into a laminate structure composed of at least three layers, the layers of the laminate structure including an inner layer, an outer layer, and at least one intermediate layer formed between the inner layer and the outer layer, wherein the intermediate layer of the outer cover

has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer.

(7) GROUPING OF CLAIMS

For the purpose of this appeal, Appellants submit that none of the claims stand or fall together. Therefore, each of claims 2, 3, 5, 8-14, and 16-21 are separately patentable for the reasons set forth hereinbelow.

(8) ARGUMENT

(A) The rejection of claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 102(e) as being anticipated by SUGIYAMA et al. is improper, the decision to reject claims 2, 3, 5, 8-14, and 16-21 on this ground should be reversed, and the application should be remanded to the Examiner.

In the Final Official Action of April 8, 2003, the Examiner rejected claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 102(e) as being anticipated by SUGIYAMA et al. or alternatively under 35 U.S.C. § 103(a) as being unpatentable over SUGIYAMA et al.

In the Advisory Action issued July 28, 2003, the Examiner maintained the rejection of claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 102(e) and withdrew the rejection of claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 103(a).

Independent claim 2 sets forth a flexible tube for an endoscope including, inter alia, an elongated tubular core body, and an outer cover which is provided over the core body,

“the outer cover having a portion which is formed into a laminate structure composed of at least three layers, the layers of the laminate structure including an inner layer, an outer layer and at least one intermediate layer formed between the inner layer and the outer layer, wherein the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer”.

Appellants submit that SUGIYAMA et al. lacks any disclosure of an outer cover formed into a laminate structure including an inner layer, an outer layer, and at least one intermediate layer formed between the inner layer and the outer layer, *wherein the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer.*

Appellant respectfully submits that the Examiner has misinterpreted the teachings of SUGIYAMA et al. In the embodiment particularly shown in figures 1-5, the SUGIYAMA et al. patent discloses a flexible tube including a helical tube 10 and a reticulate tube 20 formed of braided wire, which is covered by a jacket 30 on its outer surface. The jacket 30 is formed of a layer 30A and an outermost layer 30B. Contrary to the Examiner’s assertions (*i.e.*, the Examiner has read the claimed inner layer on the combination of the reticulate tube 20 together with material of the layer 30A within the mesh openings of the reticulate tube 20;

the intermediate layer as the layer 30A; and the outer layer as the layer 30B), the braided wire reticulate tube 20 of the SUGIYAMA et al. device forms a portion of the “elongated tubular core body”, and does not form a portion of the “outer cover”. In the SUGIYAMA et al. device, the helical tube 10 and the braided wire reticulate tube 20 form the “elongated tubular core body”; while the jacket 30 forms the “outer cover”. In this regard, as stated in the SUGIYAMA et al. patent, the jacket 30 covers the helical tube 10 and the reticulate tube 20. See particularly column 3, lines 3-8. Further, in column 3, lines 25-34, SUGIYAMA et al. discloses that the jacket 30 is formed by an extrusion molding operation in which material forming the jacket 30 is heated to cover the reticulate tube 20 and then cooled. Accordingly, the helical tube 10 and the reticulate tube 20 form a core body; and the jacket 30 forms an outer cover. Additionally, as shown in figure 2, the helical tube 10 and the reticulate tube 20 are initially provided as a unit (thus forming a core body), and then the jacket 30 is formed over the helical tube 10 and reticulate tube 20 combination (thus forming an outer cover). Thus, the jacket 30 forms an outer cover over the helical tube 10 and the reticulate tube 20. In the SUGIYAMA et al. device, the reticulate tube 20 does not form a portion of the claimed “outer cover”. Therefore, the “outer cover” of the SUGIYAMA et al. device includes only the jacket 30, which, as recognized by the Examiner, is formed only of layers 30A and 30B. (The portion 30C is not a layer, but merely an area that is made up of a mixture of layers 30A and 30B; column 3, lines 39-42.) Accordingly, since the “outer cover”

of the SUGIYAMA et al. device includes only the two layers 30A and 30B, the SUGIYAMA et al. device does not include an outer cover having three layers. Therefore, the SUGIYAMA et al. patent fails to disclose a flexible tube for an endoscope including, inter alia, “an outer cover which is provided over the core body” and which is “formed into a laminate structure composed of at least three layers, the layers of the laminate structure including an inner layer, an outer layer and at least one intermediate layer formed between the inner layer and the outer layer, wherein the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer”, as set forth in claim 2.

Moreover, in the SUGIYAMA et al. device, even assuming, arguendo, that the portion of the layer 30A within the mesh together with the reticulate tube 20 could fairly be read as an inner layer of an outer cover, the remaining portion of the layer 30A (*i.e.*, the portion not within the mesh) does not function “as cushioning between the inner layer and the outer layer” as recited in claim 2. In particular, the materials of the layers 30A and 30B are chosen for their characteristics including slipping ability. See particularly column 3, lines 9-25. SUGIYAMA et al. does not disclose any of the materials being chosen for their cushioning ability. Nor does SUGIYAMA et al. disclose that any of the materials would exhibit any cushioning properties. Further, the inner layer as asserted by the Examiner is formed of material 30A within the mesh 21 of the reticulate tube 20 that has seeped into the mesh 21

while the layer 30A was molten and being formed. Therefore, the material 30A within the mesh 21 is in fact an extension of the layer 30A; and the layer 30A cannot logically act as “cushioning” with itself. Therefore, the SUGIYAMA et al. patent does not disclose a flexible tube for an endoscope device including inter alia “an outer cover which is formed into a laminate structure composed of at least three layers” including inner, intermediate and outer layers in which “the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer” as recited in claim 2.

Additionally, the Examiner has taken the position that “the intermediate layer (30A) has a higher elasticity than the outer layer (30B; col 3, lines 51-51) and the inner layer (20, col 3, lines 31-33) and inherently acts as a cushioning means” (Final Official Action, page 3, lines 10-12). However, while the inherent disclosure of a prior art reference may be relied upon in a rejection under 35 U.S.C. § 102, the Examiner must provide some rationale or evidence tending to show inherency. “The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. *In re Rijckaert*, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). Further, to establish inherency, the Examiner must provide evidence that makes it clear that “the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill (emphasis added). *In re*

Robertson, 169 F.3d 743,745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). To properly rely on a theory of inherency, there must be provided “a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art. *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Manual of Patent Examining Procedure (MPEP) § 2112. In the present case, however, the Examiner has merely conclusively stated that the layer 30A of the flexible tube of the SUGIYAMA et al. patent would “inherently” act as cushioning. The Examiner has not provided any evidence, rationale, basis in fact, or technical reasoning to support a determination that acting as cushioning would necessarily result from the teachings of the SUGIYAMA et al. patent. Accordingly, the Examiner has failed to establish inherency in the present case, and, thus has also failed to demonstrate that SUGIYAMA et al. teaches that the layer 30A of the flexible tube acts as cushioning.

Accordingly, Appellants submit that the SUGIYAMA et al. patent lacks any disclosure of an outer cover formed into a laminate structure including *an inner layer, an outer layer and at least one intermediate layer, wherein the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer*, and that therefore SUGIYAMA et al. can not possibly be viewed as anticipating any of the present claims.

Appellants also submit that dependent claims 3, 5, 8-14, and 16-21, which are at least patentable due to their dependency from claim 2 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record.

In this regard, Appellants note that claim 3 recites a flexible tube wherein the core body has a plurality of holes and/or a plurality of recesses, which is not taught by SUGIYAMA et al.; claim 5 recites a flexible tube wherein the inner layer of the outer cover has projections which are integrally formed on the inner layer so that the projections project into the holes and/or the recesses, which is not taught by SUGIYAMA et al.; claim 8 recites a flexible tube wherein the portion of the laminate structure of the outer cover has a substantially uniform thickness over its entire region, which is not taught by SUGIYAMA et al.; claim 9 recites a flexible tube wherein any one of the inner, outer and intermediate layers is different from one of the other layers in its physical property and/or chemical property, which is not taught by SUGIYAMA et al.; claim 10 recites a flexible tube wherein any one of the inner, outer and intermediate layers is different from one of the other layers in its hardness, which is not taught by SUGIYAMA et al.; claim 11 recites a flexible tube wherein the outer layer of the outer cover contains a material having resistance to a chemical, which is not taught by SUGIYAMA et al.; claim 12 recites a flexible tube wherein the intermediate layer of the outer cover is formed of a material having higher elasticity than that

of the outer layer, which is not taught by SUGIYAMA et al.; claim 13 recites a flexible tube wherein the outer layer of the outer cover is formed of a material having higher hardness than that of the inner layer or the intermediate layer, which is not taught by SUGIYAMA et al.; claim 14 recites a flexible tube wherein at least a part of the outer layer of the outer cover has higher hardness than that of the inner layer or the intermediate layer, which is not taught by SUGIYAMA et al; claim 16 recites a flexible tube wherein at least one of the inner, outer and intermediate layers of the outer cover is formed of a material that contains at least one selected from the group consisting of polyurethane-based elastomer, polyester-based elastomer, polyolefine-based elastomer, polystyrene-based elastomer, polyamide-based elastomer, fluorine-based elastomer, and fluororubber, which is not taught by SUGIYAMA et al; claim 17 recites a flexible tube wherein each of the inner, outer and intermediate layers of the outer cover is formed of a material that contains at least one selected from the group consisting of polyurethane-based elastomer, polyester-based elastomer, polyolefine-based elastomer, polystyrene-based elastomer, polyamide-based elastomer, fluorine-based elastomer, and fluororubber, which is not taught by SUGIYAMA et al.; claim 18 recites a flexible tube wherein the outer cover is provided over the core body through an extrusion molding process, which is not taught by SUGIYAMA et al.; claim 19 recites a flexible tube as wherein the flexible tube has tip and base ends, and flexibility of the flexible tube increases in a gradual or stepwise manner along the direction from the base end toward the

tip end, which is not taught by SUGIYAMA et al.; claim 20 recites a flexible tube wherein any one of the layers constituting the portion of the laminate structure of the outer cover is different from one of the other layers in its physical property and/or chemical property, which is not taught by SUGIYAMA et al.; and claim 21 recites a flexible tube wherein any one of layers constituting the laminate structure of the outer cover is different from one of the other layers in hardness, which is not taught by SUGIYAMA et al.

For at least all of the above reasons, Appellants submit that the rejection of claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 102(e) is inappropriate and unsupported by the teachings of SUGIYAMA et al. Therefore, Appellants respectfully request that the decision of the Examiner to finally reject claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 102(e) be reversed, and that the application be remanded to the Examiner for withdrawal of the rejection over SUGIYAMA et al. and for an early allowance of claims 2, 3, 5, 8-14, and 16-21 on appeal.

(9) **CONCLUSION**

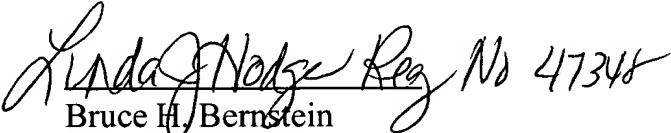
Claims 2, 3, 5, 8-14, and 16-21 are patentable under 35 U.S.C. § 102(e) over SUGIYAMA et al. Specifically, SUGIYAMA et al. lacks any disclosure of *the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as a cushioning between the inner layer and the outer layer.*

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Accordingly, Appellants respectfully request that the Board reverse the decision of the Examiner to reject claims 2, 3, 5, 8-14, and 16-21 under 35 U.S.C. § 102(e), and to remand the application to the Examiner for allowance.

Thus, Appellants respectfully submit that each and every pending claim of the present application meets the requirement for patentability under 35 U.S.C. §§ 102(e), and that the present application and each pending claim are allowable over the prior art of record.

Respectfully submitted,
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APPENDIX A

2. A flexible tube for an endoscope, comprising:

an elongated tubular core body; and

an outer cover which is provided over the core body, the outer cover having a portion which is formed into a laminate structure composed of at least three layers, the layers of the laminate structure including an inner layer, an outer layer and at least one intermediate layer formed between the inner layer and the outer layer, wherein the intermediate layer of the outer cover has a higher elasticity than the inner and outer layers so that the intermediate layer functions as cushioning between the inner layer and the outer layer.

3. The flexible tube as claimed in Claim 2, wherein the core body has a plurality of holes and/or a plurality of recesses.

5. The flexible tube as claimed in Claim 3, wherein the inner layer of the outer cover has projections which are integrally formed on the inner layer so that the projections project into the holes and/or the recesses.

8. The flexible tube as claimed in Claim 2, wherein the portion of the laminate structure of the outer cover has a substantially uniform thickness over its entire region.

9. The flexible tube as claimed in Claim 2, wherein any one of the inner, outer and intermediate layers is different from one of the other layers in its physical property and/or chemical property.

10. The flexible tube as claimed in Claim 9, wherein any one of the inner, outer and intermediate layers is different from one of the other layers in its hardness.

11. The flexible tube as claimed in Claim 2, wherein the outer layer of the outer cover contains a material having resistance to a chemical.

12. The flexible tube as claimed in Claim 2, wherein the intermediate layer of the outer cover is formed of a material having higher elasticity than that of the outer layer.

13. The flexible tube as claimed in Claim 2, wherein the outer layer of the outer cover is formed of a material having higher hardness than that of the inner layer or the intermediate layer.

14. The flexible tube as claimed in Claim 2, wherein at least a part of the outer layer of the outer cover has higher hardness than that of the inner layer or the intermediate layer.

16. The flexible tube as claimed in Claim 2, wherein at least one of the inner, outer and intermediate layers of the outer cover is formed of a material that contains at least one selected from the group consisting of polyurethane-based elastomer, polyester-based elastomer, polyolefine-based elastomer, polystyrene-based elastomer, polyamide-based elastomer, fluorine-based elastomer, and fluororubber.

17. The flexible tube as claimed in Claim 2, wherein each of the inner, outer and intermediate layers of the outer cover is formed of a material that contains at least one selected from the group consisting of polyurethane-based elastomer, polyester-based

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elastomer, polyolefine-based elastomer, polystyrene-based elastomer, polyamide-based elastomer, fluorine-based elastomer, and fluororubber.

18. The flexible tube as claimed in Claim 2, wherein the outer cover is provided over the core body through an extrusion molding process.

19. The flexible tube as claimed in Claim 2, wherein the flexible tube has tip and base ends, and flexibility of the flexible tube increases in a gradual or stepwise manner along the direction from the base end toward the tip end.

20. The flexible tube as claimed in Claim 2, wherein any one of the layers constituting the portion of the laminate structure of the outer cover is different from one of the other layers in its physical property and/or chemical property.

21. The flexible tube as claimed in Claim 20, wherein any one of layers constituting the laminate structure of the outer cover is different from one of the other layers in hardness.